

# Reidentification of *Buenia* specimens (Gobiidae) from Banyuls-sur-Mer (France, western Mediterranean)

by

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**RÉSUMÉ.** - Réidentification de spécimens de *Buenia* (Gobiidae) en provenance de Banyuls-sur-Mer (France, Méditerranée orientale).

Des spécimens identifiés comme *Buenia jeffreysii* (Günther, 1867) provenant de la collection du Zoologisches Museum, Hamburg, ont été examinés. Ces spécimens ont été capturés à Banyuls-sur-Mer (France, mer Méditerranée occidentale) le 11 juin 1979. Reposant sur l'analyse des caractères morphologiques, les spécimens ont été ré-identifiés comme *Buenia affinis* Iljin, 1930. C'est la première fois que cette espèce est capturée à l'ouest de la Sicile, dans la partie occidentale de la mer Méditerranée.

**Key words.** - Gobiidae - *Buenia affinis* - *Buenia jeffreysii* - Reidentification - Morphology - Western Mediterranean.

Zander (1982) reported several rare gobies from Banyuls-sur-Mer, France. Among them, one species was identified as *Buenia jeffreysii* (Günther, 1867) and part of these specimens were deposited in the Zoologisches Museum, Hamburg. This was the first and only report of this species in the Mediterranean. It is an eastern Atlantic species, distributed from Brittany northwards. The Mediterranean sister species, *Buenia affinis* Iljin, 1930 at the time of Zander's (1982) work was a species of uncertain validity and doubtful records (Miller, 1972, 1986). Until the detailed morphological description of northern Adriatic population (Kovačić, 2002), the only available data were those on the lateral-line system (Sanzo, 1911) and a few meristic characters (Miller, 1986). The specimens in the Zoologisches Museum, Hamburg, collected at Banyuls-sur-Mer, have now been checked and reidentified in the present work as *Buenia affinis*, based on morphological evidence.

## MATERIAL AND METHODS

### Material (Fig. 1)

1 female, 30.6+6.1 mm, 1 male, 30.7 mm (caudal fin damaged), ZMH 25475, Ile Grosse, Banyuls-sur-Mer, France, 11 Jun. 1979, collected by V. Berg and C.D. Zander and deposited in the Zoologisches Museum, Hamburg. Comparative material of *B. affinis* from the northern Adriatic, Croatia, deposited in the Prirodoslovni muzej Rijeka (PMR): three females, 32+5.7, 31.1+4.7, 27.3+5.1 mm, PMR VP981, Oštro, 7 Mar. 1997; three males, 27.7+4.9, 25.1+4.9, 23.9+4.9 mm, PMR VP979, Oštro, 25 Jun. 1997.

### Methods

Meristic methods follow Miller (1988). Meristic abbreviations: A, anal fin; C, caudal fin; D, dorsal fins; P, pectoral fin; V, pelvic disc; LL, scales in lateral series; TR, scales in transverse series. Terminology of lateral-line system follows Sanzo (1911) and Miller



Figure 1. - *Buenia affinis* (Iljin, 1930), male, 30.7 mm, caudal fin damaged, ZMH 25475, île Grosse, Banyuls-sur-Mer, France, 11 June 1979. Scale bar = 5 mm.

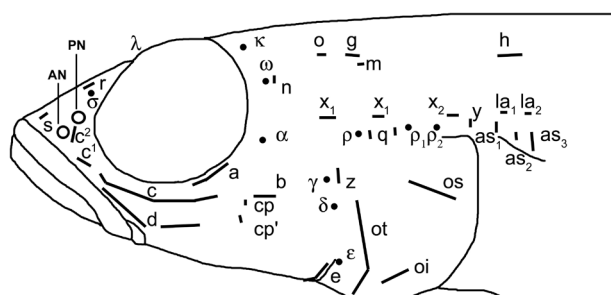


Figure 2. - Schematised head lateral line system of genus *Buenia*. Terminology of lateral-line system follows Sanzo (1911) and Miller (1986).

(1986) (Fig. 2). Data for *B. jeffreysii* are from Miller (1963, 1986) and McKay and Miller (1997), including counts of sensory papillae from illustrations.

## RESULTS

### Diagnosis

The specimens are confirmed as belonging to genus *Buenia* in having: (1) suborbital papillae with longitudinal row *a*, (2) pelvic disc anterior membrane present, (3) all three head canals present with usual number of pores, (4) suborbital rows without transverse proliferation, (5) suborbital longitudinal row *b* anteriorly at best reaching rear border of eye (Kovačić, unpubl. data; Miller, 1986). The specimens were identified as *B. affinis* based on (1) P 15-16 (vs P 18 in *B. jeffreysii*), (2) 5 sensory papillae in suborbital row *c* ending before *cp* (vs 8 sensory papillae in suborbital row *c*, ending above *cp*, in *B. jeffreysii*), (3) 5 sensory papillae in row *b* (vs 3 sensory papillae in row *b* in *B. jeffreysii*), (4) D1 rays, including D1 II not distinctly elongate in both sexes (vs D1 II elongate in males of *B. jeffreysii*).

### Description

Snout moderately large and pointed. Anterior nostril short, tubular, lacking process from rim. Posterior angle of jaws below

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mid-eye. Branchiostegal membrane attached along entire lateral margin of isthmus from immediately anterior to pectoral margin. Fins: D1 VI, D2 I/8, A I/7, C 11 branched rays in the female, male with damaged C, 15 segmented rays; P 15-16 (left and right side: 15 and 15:1, 16 and 16:1). D1 rays not elongate. P uppermost rays within membrane. V complete and rounded in male, damaged in female. V anterior membrane damaged, but clearly visible. C rounded in female, damaged in male. Body covered with ctenoid scales. Predorsal area, including nape, opercle and cheek naked. LL in the female left and right side 26 and 27, the male lost the scales along lateral midline on caudal peduncle. TR 6. The body of the preserved specimens is yellowish to olive brown. The most distinct marks are four brown marks along lateral midline and another one on caudal origin. The small brown dots are rarely scattered on body and head, more intensively on cheek, opercle, and in male on chin and on breast near V. D1 with dark blotch on membrane around D1 VI. D1, D2, V and A pigmented, P and C colourless. Head lateral line system with anterior and posterior oculoscapular, and preopercular canals, carrying pores  $\sigma$ ,  $\lambda$ ,  $\kappa$ ,  $\omega$ ,  $\alpha$ ,  $\rho$ ,  $\rho^1$ ,  $\rho^2$ , and  $\gamma$ ,  $\delta$ ,  $\epsilon$  respectively. Rows of sensory papillae were counted at least on one of the specimens, except for *preorbital* rows *r* and *s* and *anterior dorsal* row *n* that were not clearly visible for counting. Other rows as follows: (1) *preorbital*: anterior  $c^2$  (1-2) and posterior  $c^1$  (2). (2) *suborbital* row: rows *a* and *c*, including *cp*, without transverse proliferation; *a* below rear part of eye (2); *c* below eye (5), anteriorly beginning with two papillae one above other, other three longitudinally arranged ending before *cp* row; *cp* approximately below *cp*. Longitudinal row *b* (5) anteriorly beginning below rear border of eye. Longitudinal row *d* with separated supralabial (6-7) and horizontal part (5-6). (3) *preoperculo-mandibular*: external row *e* and internal row *i* divided into anterior (*e*: 15, *i*: 9), and posterior sections (*e*: 21-23, *i*: 12); row *f* (2). (4) *oculoscapular*: anterior longitudinal row  $x^1$  divided in anterior section (3) above row *z* and posterior section (3) above row *q*, posterior longitudinal row  $x^2$  (2-3) above and behind pore  $\rho^2$ ; row *z* (4) behind pore  $\gamma$ , row *q* (2) and *u* (1) between pores  $\rho$  and  $\rho^1$ , row *y* (1) behind pore  $\rho^2$ . Axillary rows  $as^1$  (4),  $as^2$  (5-6),  $as^3$  (6-8),  $la^1$  (1) and  $la^2$  (1-2) present. (5) *opercular*: transverse row *ot* (19); superior longitudinal row *os* (6); and inferior longitudinal row *oi* (4). (6) *anterior dorsal*: row *g* (4), row *o* (3), row *m* (3) and row *h* (10) present.

## DISCUSSION

The examined specimens from France are damaged to some degree and some characters were hard to see without staining which was not used in this examination. However, they differ from the diagnostic features of *B. jeffreysii* and correspond in lateral line system, fins, squamation and even coloration to the northern Adriatic samples of *B. affinis* (Kovačić, 2002). The present identification of *B. affinis* from Banyuls-sur-Mer is just the third positive record of this species, previously recorded with certainty only from Naples (Sanzo, 1911) and the northern Adriatic (Kovačić, 2002).

*B. affinis* has a complicated history as a species and it is without designated types and formal description. Miller (1972) discovered that Kolombatović's syntypes of *Gobius affinis* deposited in the Naturhistorisches Museum, Vienna, belong to another gobiid species, *Pomatoschistus pictus* (Malm, 1865) and considered *B. affinis* as another valid species (Miller, 1986) correctly placed in *Buenia* Iljin, 1930, based on Sanzo's (1911) description of the lateral-line

system. The northern Adriatic sample corresponds completely to the lateral-line system described in Sanzo (1911), being different from the lateral line systems of all other CLOFNAM gobies (Kovačić, 2002). Therefore, the sample was identified as *B. affinis* and Kovačić (2002) provided the only detailed morphological description of this species. Another two records presented in Miller (1986), the first from the Aegean Sea, and the second from a locality between Nice and Genoa, could be rejected or at least could be considered as doubtful. Even Fage (1918) was not completely sure about his species identification of postlarvae from the Aegean Sea and Miller (1986) mentioned this record as doubtful. Counts of the second dorsal and anal fin-rays, the only comparable morphological characters of postlarvae from Fage's (1918) with adults, clearly differ from data in Kovačić (2002) and from present specimens. Miller (1986) marked the second record on his distribution map of *B. affinis* as a locality approximately between Nice and Genoa, and added a count of 36 scales in lateral series without any additional explanation or cited reference. This value differs from the range of scales in lateral series given by Kovačić (2002) and from the present examination, and, without examination of the lateral-line system, this finding could not be confirmed.

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## REFERENCES

- FAGE L., 1918. - Shore-fishes. *Rep. Dan. Oceanogr. Exped. Med.*, 2(A.3): 1-154.
- KOVAČIĆ M., 2002. - A northern Adriatic population of *Buenia affinis* (Gobiidae). *Cybium*, 26: 197-201.
- MCKAY S.I. & MILLER P.J., 1997. - The affinities of European sand gobies (Teleostei: Gobiidae). *J. Nat. Hist.*, 31: 1457-1482.
- MILLER P.J., 1963. - Taxonomy and biology of the genus *Lebetus* (Teleostei-Gobioidae). *Bull. Brit. Mus. (Nat. Hist.)*, Zool., 10: 205-256.
- MILLER P.J., 1972. - The identity of *Gobius affinis* Kolombatović, with notes on the systematics and biology of *Pomatoschistus pictus* (Malm) (Pisces, Gobiidae). *Ann. Mus. Civ. Stor. Nat.*, 77: 342-358.
- MILLER P.J., 1986. - Gobiidae. In: Fishes of the North-eastern Atlantic and the Mediterranean, Vol. III (Whitehead P.J.P., Bauchot M.-L., Hureau J.-C., Nielsen J. & Tortonese E., eds), pp. 1019-1085. Paris: UNESCO.
- MILLER P.J., 1988. - New species of *Corcyrogobius*, *Thorogobius* and *Wheelerigobius* from West Africa (Teleostei: Gobiidae). *J. Nat. Hist.*, 22: 1245-1262.
- SANZO L., 1911. - Distribuzione delle papille cutanee (organi ciatiforme) e suo valore sistematico nei Gobi. *Mitt. Zool. Stn. Neapel*, 20: 249-328.
- ZANDER C.D., 1982. - Zur Morphologie und Biologie einiger seltener Grundeln des Mittelmeeres (Pisces, Gobioidae, Gobiidae). *Senckenberg. Marit.*, 14: 1-8.

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